

What is claimed is:

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5 1. A method of transmitting a normal packet from a transmitting node having a first packet-receiving channel in a network system, said packet being transmitted to a receiving node having a second packet-receiving channel, the method comprising the steps of:

(a) detecting a first set of unoccupied mini slots that flow in said second channel;

(b) checking a destination address of each of incoming packets loaded into a second set of mini slots that flow in said first channel, said incoming packets including at least one priority packet whose destination address is set to a node other than said transmitting node;

(c) temporarily storing said at least one priority packet in a priority storage; and

(d) transmitting said normal packet to said receiving node by loading said normal packet into said first set of unoccupied mini slots.

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2. The method of claim 1 further comprising the step of (e) transmitting said at least one priority packet stored in said priority storage by loading said at least one priority packet into a third set of mini slots that flow in said first channel.

3. The method of claim 2, wherein said third set of mini slots flow in said first channel next to said second set of mini slots.

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4. The method of claim 1, wherein said normal packet is tuned to said second channel before being loaded into said first set of unoccupied mini slots.

5. The method of claim 1 further comprising the step of receiving at least one regular packet included in said incoming packets, said at least one regular packet having its destination address set to said transmitting node.

6. A method of transmitting a normal packet from a transmitting node having a first packet-receiving channel in a network system, said normal packet being transmitted to a receiving node having a second packet-receiving channel, the method comprising the steps of:

20 detecting a first set of unoccupied mini slots that flow in said second channel;

 detecting a second set of mini slots that flow in said first channel;

checking a destination address of each incoming packet
loaded into said second set of mini slots;

receiving each regular packet from said second set of
mini slots, said each regular packet having its destination
5 address is set to said transmitting node;

receiving each priority packet from said second set of
mini slots, said each priority packet having its destination
address is set to a node other than said transmitting node;

temporarily storing each priority packet in a priority
storage; and

transmitting said normal packet to said receiving node
by loading said normal packet into said first set of unoccupied
mini slots.

7. The method of claim 6 further comprising the step of
transmitting each priority packet stored in said priority storage
by loading each priority packet into a third set of mini slots
that flow in said first channel.

20 8. The method of claim 7, wherein said third set of mini
slots flow in said first channel next to said second set of mini
slots.

9. The method of claim 6, wherein said normal packet is tuned to said second channel before being loaded into said first set of unoccupied mini slots.

5 10. An apparatus of transmitting a normal packet from a transmitting node having a first packet-receiving channel in a network system, said normal packet being transmitted to a receiving node having a second packet-receiving channel, the apparatus comprising:

a Wavelength Tunable Receiver (WTR) detecting a first set of unoccupied mini slots that flow in said second channel;

a Wavelength Fixed Receiver (WFR) checking a destination address of each of incoming packets loaded into a second set of mini slots that flow in said first channel, said incoming packets including at least one priority packet whose destination address is set to said transmitting node;

a priority storage temporarily storing said at least one priority packet; and

a Wavelength Tunable Transmitter (WTT) transmitting
20 said normal packet to said receiving node by loading said normal packet into said first set of unoccupied mini slots.

11. The apparatus of claim 10, wherein said WTT further transmits said at least one priority packet temporarily stored in

said priority storage by loading said at least one priority packet into a third set of mini slots that flow in said first channel.

5 12. The apparatus of claim 11, wherein said third set of mini slots flow in said first channel next to said second set of mini slots.

13. The apparatus of claim 10, wherein said WTT tunes said normal packet to said second channel before loading said normal packet into said first set of unoccupied mini slots.

14. The apparatus of claim 10, wherein said WFR receives at least one regular packet included in said incoming packets, said at least one regular packet having its destination address is set to said transmitting node.